5.1.0pre9 vs. 4.11.1: High p_T πs and es

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Outline

- What are compared
- What is different

What are compared

- Energy deposited in Calorimeters
  - Electrons with 10, 20, 57 and 120 GeV energy
  - Pions with 10, 20, 57 and 120 GeV energy
- CES related quantities for electrons

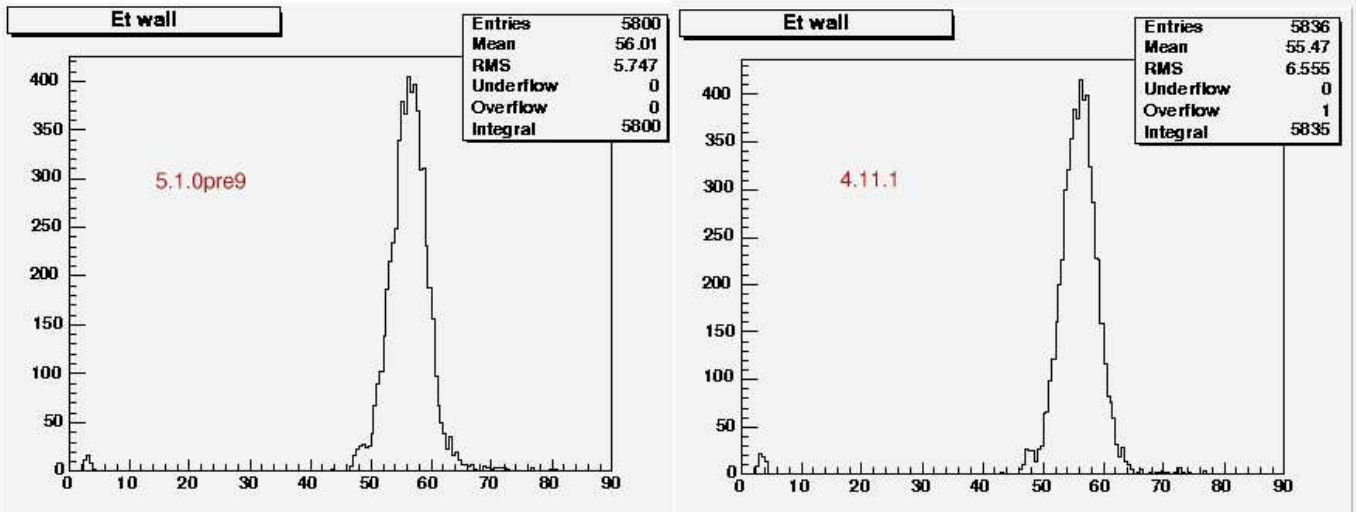
Generated web-pages, available from:

http://helios.physics.utoronto.ca/~shabnaz/sim_val/

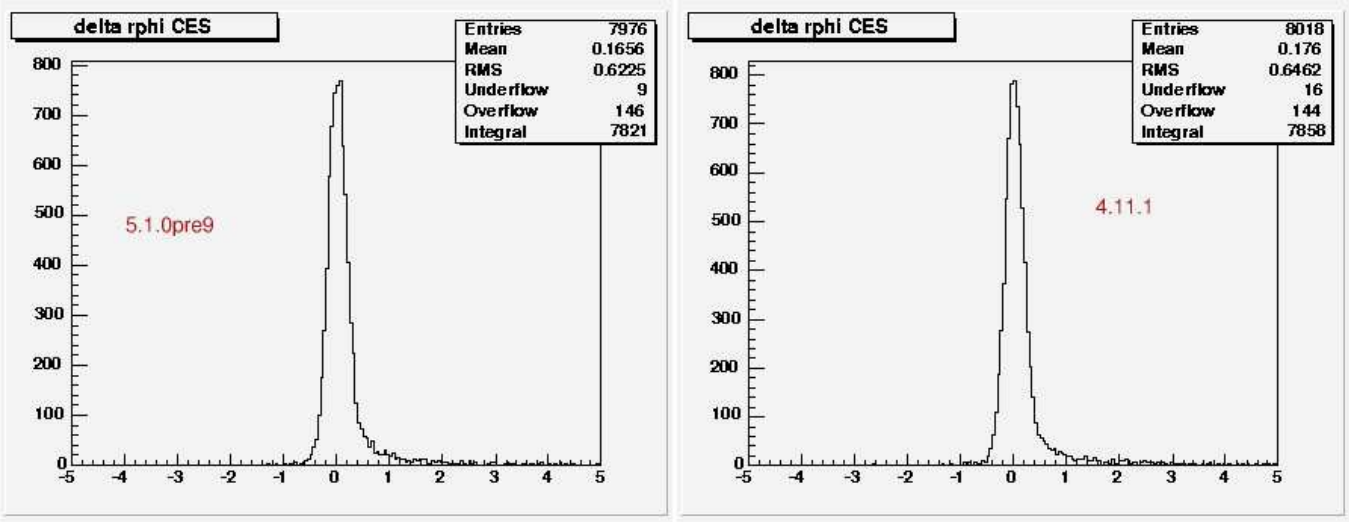
What is different, es

- Mean pt of highest pt track in plug/wall region decreased by about 1 to 11% for 10 to 120 GeV es respectively
- Mean had/em in plug/wall region increased about 2 and 7% for 10 and 20 GeV electrons respectively and decreased by about 1% for 57 and 120 GeV electrons
- Mean Et in plug/wall region increased by about 1-2% for 57 and 120 GeV electrons and decreased by about 2% for 10 GeV electrons
- RMS for Et in plug/wall region increased by about 3% for 10 GeV electrons and decreased by about 12 and 16% for 57 and 120 GeV electrons
- Mean had/em in central region increased by ~ 5% for 20 GeV electrons
- CES χ^2 increased by ~ 2% for 20 GeV electrons and decreased by about 3% for 57 GeV and 6%(wire) and 9%(strips) for 120 GeV electrons
- RMS of CES $\Delta r-\phi$ is decreased by ~ 4% for 57 GeV electrons
- Mean Et in central region increased by about 2% for 57 GeV electrons
- RMS for energy distribution of tower(28,03) is increased by about 2% for 10 GeV electrons and decreased by about 2% for 120 GeV electrons
- Fits for energy distribution of tower(40,03) are changed for 20, 57 and 120 GeV electrons
  - Mean increased by ~ 1%
  - Probability increased for 57 and 120 and decreased for 20 GeV electrons
  - Sigma decreased for all between 1 to 5%
- Sigma given by fit to energy distribution of tower(40,03) for 10 GeV electrons is decreased by ~ 11% although it is still higher than sigma in 4.9.1hpt1 by ~ 14%

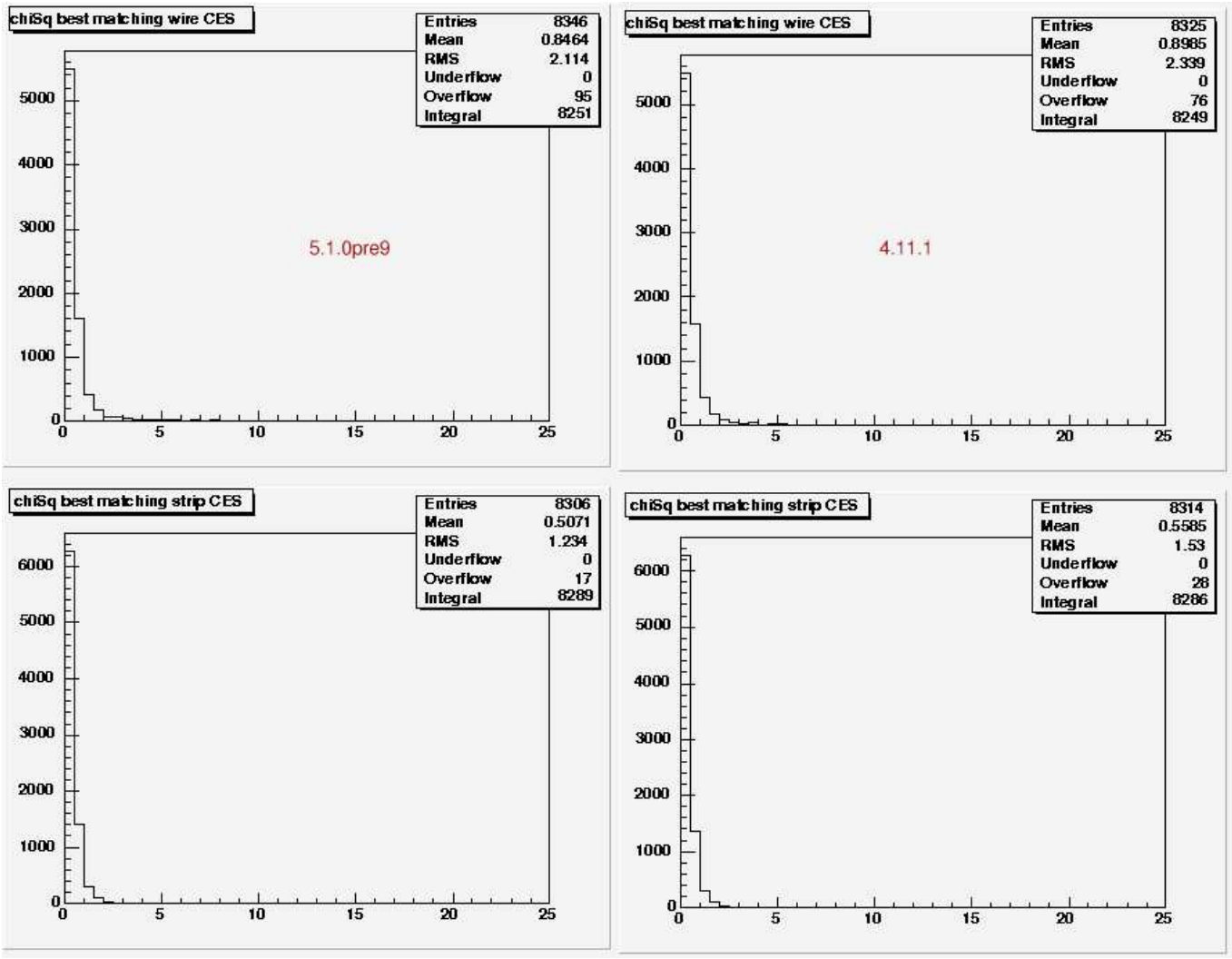
E_T in plug region for 57 GeV e



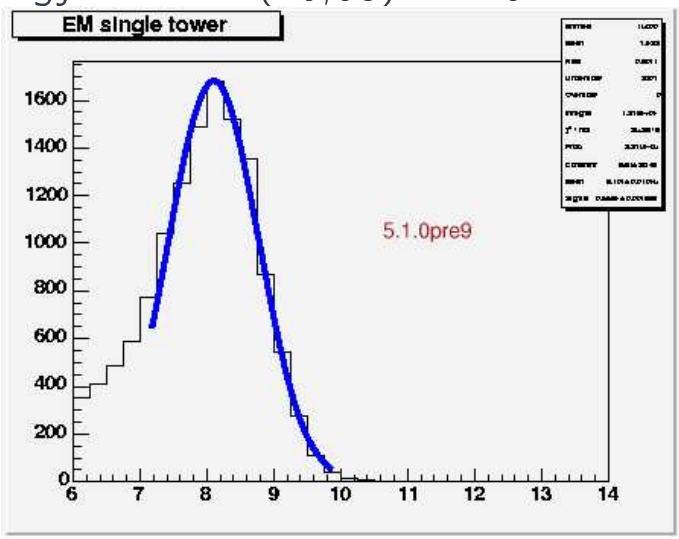
$\Delta r - \phi$ for 57 GeV e

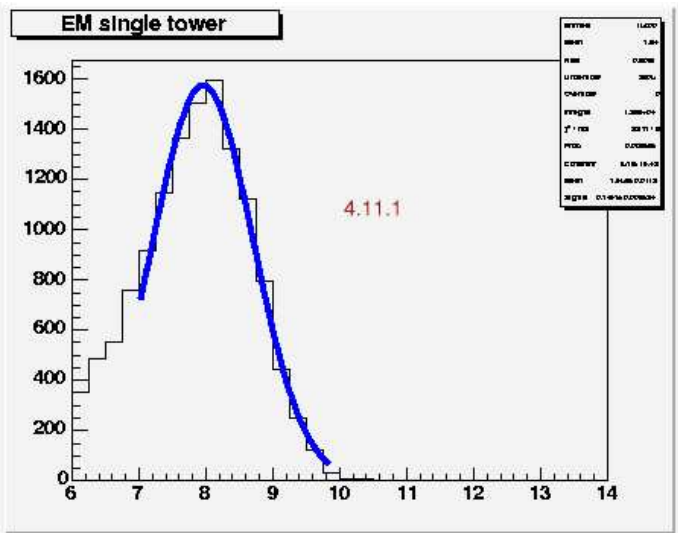


CES χ^2 for 120 GeV e



Energy in tower (40,03) for 10 GeV e

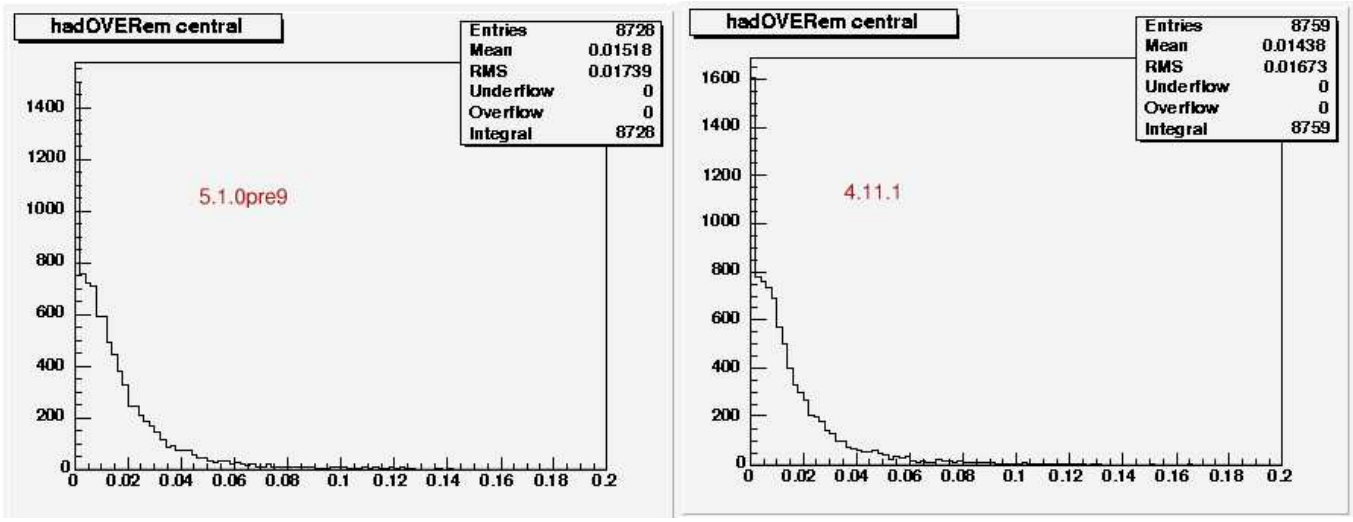




The fit result:

MEAN	8.10 ± 0.01 GeV	7.96 ± 0.01 GeV
SIGMA	0.67 ± 0.01 GeV	0.75 ± 0.01 GeV
CONST	1681 ± 20	11576 ± 19

had/em for 20 GeV e in central region

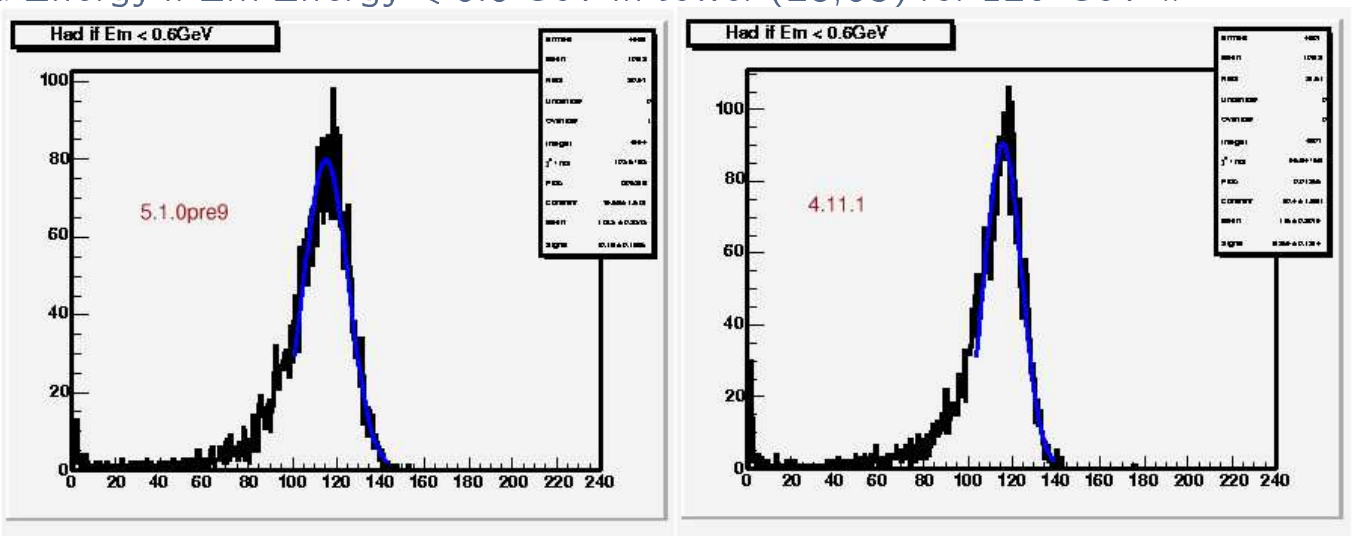


What is different

pions tower(28,03)

- Mean Energy in surrounding towers have decreased
- RMS of Total Energy has decreased by about 8% for 10 and 20 GeV pions
- The fit to Had energy if EM<0.6 GeV is changed
  - sigma given from the fit decrease by about 22, 13 and 5% for 10,20 and 57 GeV pions respectively
  - sigma given from the fit increase by about 22% for 120GeV pions
  - mean given from the fit increases by about 4% for 10 GeV pions
  - the fit probability is also changed from 0 to 30% for 10 GeV pions and from 96 to 37% for 20 GeV pions
- Mean EM energy and mean EM fraction increase by about 2% for 20 GeV pions and decrease by about 2% for 120 GeV pions

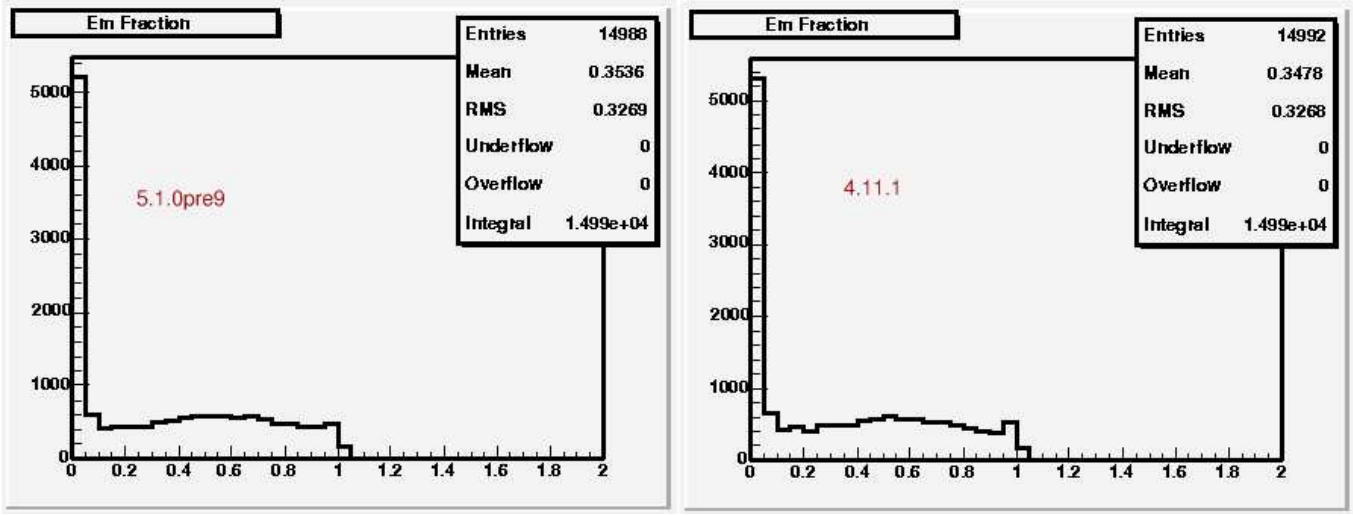
Had Energy if Em Energy < 0.6 GeV in tower (28,03) for 120 GeV π



The fit result:

MEAN	115.3 ± 0.2 GeV	116.0 ± 0.2 GeV
SIGMA	10.2 ± 0.2 GeV	8.4 ± 0.2 GeV
CONST	80 ± 2	90 ± 2

EM fraction in tower (28,03) for 20 GeV π



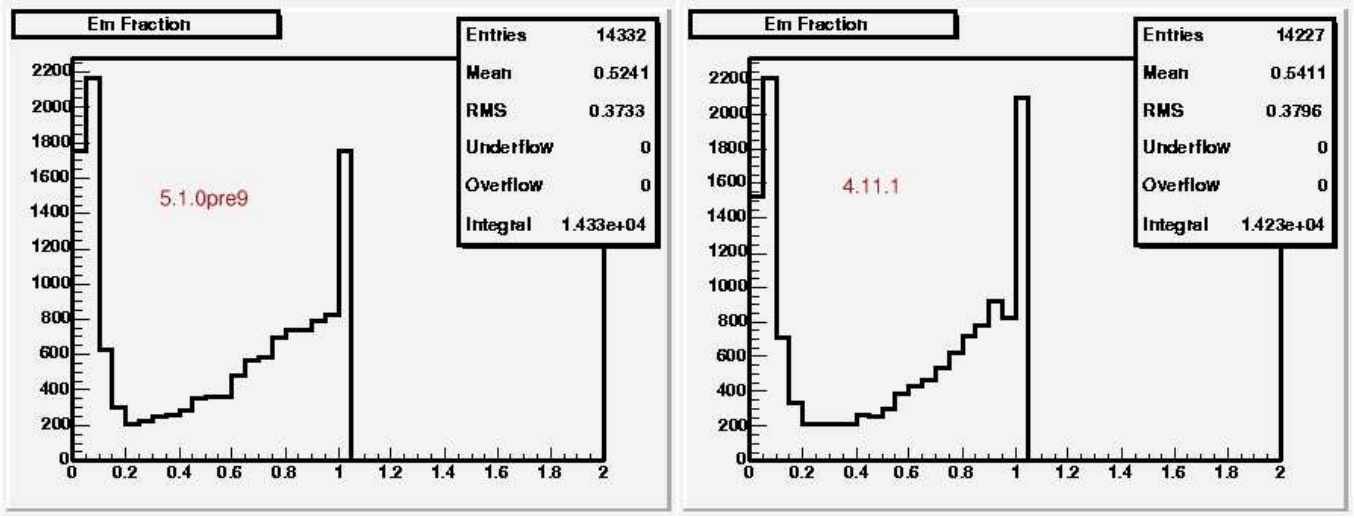
What is different

pions tower(40,03)

- Mean Energy in surrounding towers have increased
- RMS of Total Energy has decreased by about 3-4% for 10 and 20 GeV pions
- Mean Had energy has increased by about 4-7%
- RMS for Had energy has also increased by about 3-6%
- Mean EM energy has decreased by about 1.5% for 57 and 120 GeV pions and about 4% for 10 and 20 GeV pions
- Mean EM fraction has decreased (except for 57 GeV pions) by about 3%

Please NOTE that the shape for 57 and 120 GeV πs is still strange, I guess due to spike killer (as it was the case for 4.11.1)

EM fraction in tower (40,03) for 10 GeV π



Had Energy in tower (40,03) for 57 GeV π